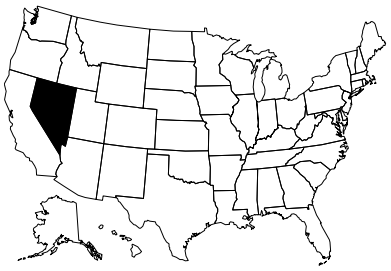
NEVADA



Contact Information

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Program Description

Nevada began its Bioassessment Program in the year 2000 and has continued to collect biological information on an annual basis. Although the program is in its infancy, the State plans to continue collecting biological data for ambient monitoring and to assist in defining reference conditions and sites. There are seven primary water basins in Nevada and the State has collected biological data annually on four of these basins covering approximately 600 river miles. It is expected the State will continue to collect at these river basins, in addition to new basins and several lakes, until a valid biological baseline has been established over the next four to five years. After such time, the State is expected to switch to an alternating site or basin ambient bioassessment monitoring program.

The program primarily consists of macroinvertebrate collection, physical habitat evaluations, and physical measurements of slope, velocity, flow, dissolved oxygen, specific conductivity, pH, temperature, substrate composition, canopy cover, and width and depth of the sampling area. Periphyton, plankton, and/or chlorophyll sampling is conducted when necessary to assist in defining problem areas. Water chemistry data is collected at sites where the water chemistry is currently unknown. The data will eventually be used in 305(b) and 303(d) reports in addition to basin assessments of stream health. Some NPDES dischargers in the State are voluntarily collecting macroinvertebrates to assess impact to the aquatic environment.

Reference site criteria are currently being defined based on available information. The State expects to use chemical data, habitat assessments, physical measurements, professional knowledge and degrees of human impact to define the conditions and sites. Where reference sites are unavailable, the State expects to use modeling and/or least disturbed sites to evaluate conditions. It is anticipated to take several years for reference sites to be selected.

An independent biological laboratory conducts identification of macroinvertebrates. QA/QC of macroinvertebrate identification consists of approximately 15% of the samples being analyzed by two distinct biological laboratories. Data collected will be stored annually in the Ecological Data Application System (EDAS). Analysis and evaluation of the bioassessment data will be developed as the program progresses and based on the most accurate methods. Reference sites, where appropriate, will be used as a baseline for analysis.

Nevada recently hosted its first bioassessment conference in the State. The conference resulted in the formation of a State Bioassessment Committee consisting of agencies, tribes, and industry. The primary goal of the committee is to evaluate and coordinate protocols, methodologies and sampling in the State. Nevada also participates in the National Aquatic Life Use (ALUS) work group based out of USEPA Headquarters in Washington, D.C. The State is also planning to host an Arid West Aquatic Life Use Workgroup in conjunction with other arid states, tribal entities and USEPA in the next year.

Documentation and Further Information

Nevada's 305(b) report, September 2000: http://ndep.state.nv.us/bwqp/305b1998.pdf

DRAFT Nevada's 2002 303(d) Impaired Waters List, June 2002: http://ndep.state.nv.us/bwqp/303list.pdf

Nevada's 1998 303(d) List, April 1998: http://ndep.state.nv.us/bwqp/nv303d98.pdf

Draft Continuing Planning Process, December 2001: http://ndep.state.nv.us/bwqp/cppdraft.pdf

Water Quality Standards, narrative and numeric: http://ndep.state.nv.us/bwqp/stdsw.htm

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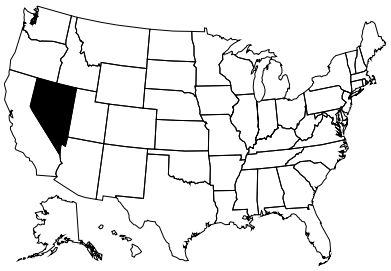

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Programmatic Elements

Uses of bioassessment within overall water quality program*	✓	problem identification (screening)
	✓	nonpoint source assessments
	✓	monitoring the effectiveness of BMPs
	✓	ALU determinations/ambient monitoring
		promulgated into state water quality standards as biocriteria
	✓	support of antidegradation
	✓	evaluation of discharge permit conditions
	✓	TMDL assessment and monitoring
	✓	other:
Applicable monitoring designs	✓	targeted (i.e., sites selected for specific purpose) *(special projects, specific river basins or watersheds, and comprehensive use throughout jurisdiction)*
	✓	fixed station *(i.e., water quality monitoring stations) (special projects, specific river basins or watersheds, and comprehensive use throughout jurisdiction)*
		probabilistic by stream order/catchment area
		probabilistic by ecoregion, or statewide
	✓	rotating basin *(specific river basins or watersheds and comprehensive use throughout jurisdiction)*
		other:

*Bioassessment information will eventually be used in 303(d) and 305(b) reports.

Stream Miles

Total miles *(determined using River Reaches and calculated using GIS coverages.)*	**143,578**
Total perennial miles	14,988
Total miles assessed for biology**	**602**
fully supporting for 305(b)	0
partially/non-supporting for 305(b)	0
listed for 303(d)	0
number of sites sampled	50-60
number of miles assessed per site	–

**602 miles were assessed per year for 2000 and 2001 by the state (NDEP) and 97 miles were also assessed by others (Dischargers). The state estimates 900 river miles to be assessed in 2002. Since mileage is estimated and Nevada's 2001 data set has not been analyzed, the State has not used biology for 305(b)/303(d); therefore "0" is reported. However, it will be used in the future.

Aquatic Life Use (ALU) Designations and Decision-Making

ALU designation basis	Class System (A,B,C), Fishery Based Uses and Warm Water vs. Cold Water	
ALU designations in state water quality standards	Propagation of aquatic life and the levels of warm water and cold water fisheries.	
Narrative Biocriteria in WQS	under development	
Numeric Biocriteria in WQS	none	
Uses of bioassessment data in integrated assessments with other environmental data (e.g., toxicity testing and chemical specific criteria)	✓	assessment of aquatic resources
	✓	cause and effect determinations
		permitted discharges
	✓	monitoring (e.g., improvements after mitigation)
	✓	watershed based management
Uses of bioassessment/ biocriteria in making management decisions regarding restoration of aquatic resources to a designated ALU	Truckee River Restoration projects include the lahontan cutthroat trout.	

Reference Site/Condition Development*

Number of reference sites	**0 total**	
Reference site determinations	✓	site-specific
	✓	paired watersheds
	✓	regional (aggregate of sites)
	✓	professional judgment
		other:
Reference site criteria	This is under development. NDEP expects to use chemical, habitat, physical measurements and least human impact. Where reference sites are unavailable modeling and/or metrics will be used to evaluate conditions.	
Characterization of reference sites within a regional context	✓	historical conditions
	✓	least disturbed sites
		gradient response
	✓	professional judgment
		other:
Stream stratification within regional reference conditions	✓	ecoregions (or some aggregate)
	✓	elevation
	✓	stream type
	✓	multivariate grouping
		jurisdictional (i.e., statewide)
		other:
Additional information		reference sites linked to ALU
		reference sites/condition referenced in water quality standards
	✓	some reference sites represent acceptable human-induced conditions *(for fishery based uses)*

*Nevada is in the process of developing reference sites. This section has been completed based on the criteria that will be considered during development.

Field and Lab Methods

Assemblages assessed	✓	benthos *(<100 samples/year, single season, multiple sites - broad coverage)*
		fish
	UD	periphyton *(<100 samples/year, single season, multiple sites - watershed level)*
		other:
Benthos		
sampling gear		kick net (1 m); 500-600 micron mesh
habitat selection		riffle/run (cobble) *(when unavailable, use vegetation and sediment)*
subsample size		500 count
taxonomy		combination--family, genus, species
Periphyton		
sampling gear		**natural substrate**: brushing/scraping device (razor, toothbrush, etc.) Periphyton will be routinely collected and analyzed by a professional lab beginning in 2002. Chlorophyll analysis is performed at some stations.
habitat selection		n/a
sample processing		chlorophyll *a*/ phaeophytin and taxonomic identification
taxonomy		genus level for soft-bodied algae when possible; diatoms are not cleared
Habitat assessments		quantitative measurements (some sites) and visual based; performed with bioassessments; riffle slope, flow, average width and depth of flow, riffle velocity, canopy cover, some vegetation (grass, scrubs, trees) coverage along riparian zone, reach length, conductivity, temperature and dissolved oxygen
Quality assurance program elements		Quality assurance program elements are currently being developed (i.e., standard operating procedures, quality assurance plan, taxonomic proficiency checks, specimen archival).

Data Analysis and Interpretation*

Data analysis tools and methods	✓	summary tables, illustrative graphs
		parametric ANOVAs
	✓	multivariate analysis
	UD	biological metrics *(NDEP has not yet developed metrics but analysis tools and methods will be developed based on the most accurate method)*
	✓	disturbance gradients
		other:
Evaluation of performance characteristics	✓	repeat sampling *(ideally, 5 years worth of data will be collected at each site to determine the variability)*
		precision
		sensitivity
		bias
		accuracy
Biological data		
Storage		EDAS (being developed)
Retrieval and analysis		EDAS (being developed)

*Analysis tools and methods will be developed more fully in the future.